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How Property Crime and Violent Crime Respond to a State Setting Their Minimum Wage Above the Federal Minimum Wage

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How Property Crime and Violent Crime Respond to a State Setting Their Minimum Wage Above the Federal Minimum Wage

by

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Abstract

Labor market conditions are known to be an important factor for determining crime rates. This is why policy makers suggest increasing the minimum wage can help reduce crime. The argument is based on the assumption that raising the minimum wage will not have undue negative employment effects and result in improving the legitimate labor market by enticing those who would commit crimes to enter the legitimate labor market. Using a cross-section of the 50 states, this study examines overall youth property crime and overall youth violent crime from the 2000-2016 Uniform Crime Reports (UCR) to determine what effect there is from a state setting their minimum wage above the federal minimum wage. I additionally examine the individual categories of youth property crime and youth violent crime to see if they behave similarly to the overall indices. My models use fixed effects panel estimation. There is a statistically significant negative effect from a state setting their minimum wage above the federal minimum wage on overall property crime and three of its categories. One category of property crime and one category of violent crime show a statistically significant positive effect from a state setting their minimum wage above the federal minimum wage. Overall violent crime and three of its categories do not show a statistically significant effect from a state setting their minimum wage above the federal minimum wage.

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Chapter 1: Introduction

Crime is an ever-present aspect of society that has existed for as long as humans have. From Ancient Rome to Native American tribes, groups have established rules to govern the social order and people have broken those rules. Modern politicians, just like those who governed before them, are faced with this constant issue.

There is no single factor that determines crime rates. They are subject to a wide array of factors, which means that policy makers can take a number of actions towards reducing the amount of crime. More obvious measures are those that seek to directly control crime. Increasing incarceration or the number of police have both shown to be effective measures for reducing crime rates (Levitt, 2004). Unfortunately, there is a glaring issue with implementing such policy. Police and prisons are quite expensive and impose serious budgeting constraints. For instance, in 2012 the average cost of housing a single inmate in the United States was over $29,000 a year (Kearney et al., 2014). Increasing the number of inmates housed by any significant amount is quite a burden to pass on to taxpayers.

Direct crime control measures are not the only measures to have a known impact on crime. Education also shows to have a relationship with crime rates, and thus can be a viable policy option for reducing crime. Machin and Meghir (2004) find that educational attainment has a negative relationship with crime rates. Education though, as with direct crime control measures, will impose serious budgetary constraints.

With a mind towards maintaining balanced budgets, policy makers have grown fond of suggesting policies that impact labor market conditions as measures that can aid in crime reduction. This is because there is a known relationship between labor market conditions and criminal behavior. Mustard (2010) finds that people's propensity to engage in criminal activity is negatively related to employment opportunity. It is also known that a negative relationship exists between wages and crime rates (Gould et al., 2002). This is why policy that impacts the labor market is enticing to policy makers.

One policy measure that affects labor market conditions and has very little implications for budgeting is minimum wage policy. Already this policy is quite popular amongst politicians, partially because of its impact on criminal activity. In recent years many states and cities have raised their minimum wage to the point that over half of the states now have minimum wages higher than the federal minimum wage. Many of the politicians that have pushed for these increased minimum wages have espoused that the increase will help alleviate crime. The logic behind this is due to the fact that the minimum wage has the greatest impact on youth and unskilled workers, the two groups most likely to commit crimes.

The issue with using the crime reduction argument as a reason to increase the minimum wage is that economic theory alone has trouble telling us how the minimum wage will shift crime rates. This is because the minimum wage is known to have two effects when it comes to impacting crime. One effect is the unemployment effect, which relates to labor demand. When the minimum wage is increased, the cost for unskilled labor rises for firms. This leads to less demand for unskilled labor, which results in a displacement of workers or a reduction in their

hours worked. These workers lose income and consequently have more time and economic need to commit crimes. The other effect is the wage effect. As the minimum wage rises, income rises for those people that are legitimately employed. This rise in income for legitimate employment will cause some people who weren't participating in the legitimate labor market to seek entry into it. It also makes it less likely that those who were already working will seek to engage in criminal activity. These two effects act in opposition to each other, and this is why it is difficult for economic theory to tell us what effect the minimum wage has on crime rates.

I examine youths aged 16 to 24 across a cross section of the 50 states over the years 2000 through 2016 to examine the direct effect of the minimum wage on the youth violent crime index, youth property crime index and the individual crime categories that make up the two indices. My crime data represents total youth arrests per year per 100,000 population. I classify the states based on whether they use the federal minimum wage, which is currently $7.25 an hour, or a higher minimum wage to determine what impact there is on crime from a state setting their minimum wage above the federal minimum wage. The results show that youth property crime experiences the greatest impact from changing the minimum wage. The youth property crime index and three of its categories experience a measurable decrease from a state setting their minimum wage above the federal minimum wage. For these types of crime, the wage effect appears stronger than the unemployment effect. One type of youth property crime and one type of youth violent crime experience a measurable increase from a state setting their minimum wage above the federal minimum wage. For these types of crime, the unemployment effect appears stronger than the wage effect. The study does not show minimum wage having any effect on the youth violent crime index or three of its categories.

Chapter 2 of my paper provides a discussion of existing research on the various factors that are known to impact crime rates and the two effects that minimum wage has on crime. I then describe how my research adds to the existing research on the topic of minimum wage and crime. In Chapter 3 I present the full theoretical model of how minimum wage impacts crime rates. I also provide a discussion of the data used in my study, what hypotheses I will be testing and the full details of my empirical regression model. Chapter 4 is a presentation and discussion of the full results obtained from my regression model. I conclude the paper with Chapter 5 by briefly discussing my results with respect to policy and offer suggestions for how future research can build on my study. After the paper I include an appendix which shows the results of my model on total crime and all of the other individual crime categories for the sake of comparison.

Chapter 2: Literature Review

Crime rates are a result of an amalgamation of many factors. There is not a single cause that can be readily identified as to why crime rates vary across regions and throughout time. Also, what might be an important factor in determining crime rates in one particular region may not show to be an important factor in determining crime rates in a different region. This means that a number of policies can play a role in how crime rates change, and that policies might need to be tailored to specific locales in order to truly have an effect on crime rates. For these reasons, researchers looking into crime have looked at many different things to help policy makers determine the potential impacts of their decisions.

While there might be many factors at play when it comes to the crime rates in an area at a given time, the one factor that is always present is people. People create their desired social order and it is people who violate the social order through criminal activity. Because people are the most important factor for crime, it is very important to consider demographics when examining crime. For example, Heiskanen and Lietonen (2016) examine gender and crime across the globe and find that in all regions of the world, the rate of male suspects is significantly higher than the rate of female suspects. Despite inconsistent reporting across the globe, this result holds for every region they examine in their research. Men consistently show to be suspects at nearly three times the rate of women no matter what part of the globe is being examined. This indicates that regions with higher proportions of males in the population are more likely to experience higher crime rates. This marks gender as an important demographic factor to consider when examining crime. In the United States, another demographic factor that researchers have considered is race.

A review of crime statistics in the United States finds that racial minorities commit violent crimes at a higher rate (Rosich, 2007). The finding is a bit misleading though, because the review also finds there is a disproportionate representation of minorities in the criminal justice system. This makes the rate appear even greater than it should, but despite this skew there is still clear evidence to support the finding that minorities do commit violent crimes at a higher rate than whites in the United States. These studies show that crime rates are partially determined by who makes up a population.

Because demographics are known to have an impact on crime rates, some studies have looked at the impact of foreign-born population. Research on how the number of foreign-born people impacts crime rates by Cerulli et al. (2018) finds that when the number of foreign-born make up less than 20 percent of a population there is minimal impact on crime rates in an area. When the proportion of foreign-born people crosses 20 percent though, then there is a noticeable rise in crime rates. The research also finds that integration does not seem to play a factor in this effect. Evidence suggests that foreign-born population being economically disadvantaged is the cause of the rise in crime rates. Still, this signifies that immigration policy can have a legitimate effect on crime rates. Policy makers can tailor their immigration policy with the aim of keeping the percentage of foreign-born population below the crime increasing level. They could also tailor policy to mitigate the economic disadvantages.

Most policy implemented for reducing crime rates aims to influence the behavior of the population. This is because there are many policy areas available which influence behaviors related to criminal activity. Some policy actions serve as direct deterrents on criminal behaviors.

Other policies serve to entice positive behavioral outcomes, typically by directly improving a person's economic situation or improving labor market conditions.

Naturally, when people think about crime they also think about police. Police are employed with the specific purpose of maintaining the social order, and they do that primarily by combating criminal activity. The role that police have in society has made researchers seek out how crime rates are influenced by police. Wilson and Boland (1978) find that both the amount of resources devoted to policing and policing strategies both play a role in how effective police are at reducing crime. They note that the effectiveness of police varies greatly depending on the type of crime. Visible crimes such as robbery are more noticeably impacted by police than are stealthier crimes such as burglary. They surmise that the reason for this is because stealthier crimes lack witnesses and evidence, making it more difficult for police to pursue offenders. The effect that police have on crime is known as deterrence theory, and it makes sense that the effect is greater for crimes where the offender is not making as much of an effort to remain hidden. Deterrence theory is not a new notion, but one that has been around for centuries. Early scholars such as Beccaria and Voltaire (1872) are known to have mentioned deterrence theory. While it has been known for a long time that police have an effect on crime rates, more recent efforts have focused on quantifying that effect in a measurable way. Chalfin and McCrary (2013) measure the resources spent on police and find that in 2010 a single dollar spent on policing returns $1.60 in social welfare value. The societal benefit of this allocation of resources is not consistent though. They note that the crime reduction benefit in spending on police is much greater for violent crime than it is for property crime. There is still a noticeable benefit in terms of reducing property crime. While police do have a significant and measurable effect on

deterring criminal activity, it is important to note that the effect varies based on the type of criminal activity. It is still important to account for police though, no matter the type of crime being examined.

Police are one of the most visible deterrents against criminal behavior, but they are not the only deterrent that has shown to be effective in reducing criminal activity. There is evidence that incarceration is also an effective policy measure for reducing crime rates. Levitt (2004) finds that crime reductions in the 1990s were at least partially attributable to incarceration. The increases in incarceration during this period were responsible for an approximately twelve percent decline in violent crime and an eight percent decline in property crime. This decline is attributed to the deterrent effect of incarceration. As with policing though, there seems to be some variance in the impact of incarceration on crime rates. Research into prison cycling, the act of removing offenders from society and then replacing them after their incarceration, suggests that the region being discussed is an important factor (Clear et al., 2014). In this study, some regions experienced an increase in criminal activity when a person was removed to prison from society while other regions experienced a decline in criminal activity when a person was removed to prison from society. They determine that there is additional societal response beyond the individual criminal, and that response is not consistent in all regions. Another factor that has been considered with incarceration is scale. Liedka, Piehl and Useem (2006) note the effectiveness of prisons in reducing crime, but that the effectiveness depends on the size of the prison. They find decreasing returns to scale and the decrease in returns accelerates rapidly the larger prisons become. Couple these diminishing returns with the fact that housing prisoners is

an expensive endeavor, and it makes sense that policy makers seek out alternative measures for crime reduction.

There are means of reducing criminal behavior beyond implementing deterrent measures. Policies that encourage positive behavior have also shown to be effective. One policy area that has this sought-after positive effect is education policy. Witte and Tauchen (1994) examine young men and find that participation in school is associated with a reduction in criminal activity. They attribute this reduction to the fact that being engaged in school occupies the young men's time thus reducing the opportunity they have to commit crimes. This finding suggests that other similar legitimate activities should have a similar crime reducing effect through time occupation if they were provided.

Education's crime reducing effect goes beyond its ability to legitimately occupy a potential perpetrator's time. This is because education also plays a role in how a person engages with the labor market. Gould et al. (2002) determine that wages are a significant factor in the reason people choose to commit crimes. Machin et al. (2011) demonstrate that higher educational attainment is associated with earning higher incomes and thus has a crime reducing effect. As people become more skilled, they are able to demand a better wage. In terms of policy, there are other benefits to educational attainment. Mincer (1991) notes that there is an overall lesser incidence of unemployment for those who have attained higher levels of education. Higher unemployment is associated with higher crime rates, and by reducing unemployment education combats this effect. Education reduces the chances that people will experience economic distress. Economic distress is a known factor in driving people to commit criminal acts.

While the overall effect of higher educational attainment is to decrease crime, there are instances where a person's education might increase criminal activity. Levitt and Lochner (2001) note that certain disciplines provide the skills and knowledge necessary to improve a person's chances at being successful in criminal endeavors. They note that this may lead to an increase in certain crimes because the criminal act is more rewarding. If people are not sufficiently rewarded for their education in the legitimate labor market, then they are more likely to be enticed to commit crime.

Beyond the chance that some disciplines might increase crime, there is another issue with education. Education, as with police and prisons, is a costly endeavor. From models based on the school years 1998-1999 through 2001-2002, Gronberg et al. (2004) estimate that at the mean an additional high school student costs $3,726 in the state of Texas. They note that if you seek to improve the outcome of students, such as by increasing the passing rate, then the cost per student will increase accordingly. Fortunately, like with police, there is an increased return from the money spent on education. Hanushek and Wößmann (2010) find that education improves the skill of workers and that skill improvement has a positive impact on economic growth. There is a noticeable societal payoff from education, one that should lead to increased demand for labor. Education has serious budgetary implications, but its role in the labor market has positive economic benefits.

Noting that part of the reason education impacts crime rates is because it reduces the chances of becoming unemployed, it makes sense to examine the relationship unemployment has with crime rates. Fleisher (1966) shows that there is a positive relationship between

unemployment and crime rates. This relationship is at least in part attributable to an unemployed person lacking income. This lack of income from being unemployed can be addressed through unemployment insurance policies, which in turn impacts crime rates. Petroulakis (2017) examines the United States during the great recession and notes that crime rates actually were falling during this period despite extremely high unemployment. He finds that unemployment insurance was a large part of why crime fell when unemployment was high. More specifically, the unemployment insurance benefit extensions blunted the effect that prolonged unemployment would typically have on crime rates. This also shows that social welfare policies can play an important role in determining crime rates. Social welfare policies act to negate other factors that would normally lead to increases in criminal activity.

Education's other crime reduction benefit has to do with income. When examining the relationship between income and crime rates, it has been found that a person's direct income is not the only factor in determining crime rates. Income inequality also appears to play an important role in crime rates. İmrohoroğlu et al. (2006) note that income inequality appears to be one of the more important variables in determining crime rates. Because the disparity between low earners and high earners is important, other researchers have sought to explain the reason for the significance. Kelly (2000) suggests that the effect of income inequality serves to juxtapose the low returns of legitimate labor activities with the high wealth of others. Lower income earners appear to be more enticed by the potential payoff in crime when those around them have a disproportionately larger amount of wealth. One potential explanation for this is strain theory (Merton, 1938). The theory states that poorer individuals engage in crime because they are triggered by frustration. There is merit to this theory when viewed from a psychological

standpoint. Perceived social exclusion triggers psychological responses according to Leary (1990). Wealth is an excluding factor for many goods and services. Low income can act as a catalyst for increasing crime rates when income inequality is high, especially when exclusion based on income is visible.

Research has consistently shown that labor market conditions are an important factor in crime. One policy that impacts labor market conditions in a number of ways is the minimum wage. Minimum wage is known to have an effect on income, income inequality and unemployment. These three things are all known to have a direct impact on crime rates.

Because minimum wage can increase the income of low wage earners, it has the potential to reduce income inequality. Litwin (2015) demonstrates that the minimum wage does indeed reduce income inequality. This study shows there is a maximizing level for this reduction. Minimum wages above that level actually begin to reverse the reduction in income inequality. There is probably some reduction in crime rates due to this effect, but research measuring this impact of minimum wage has not sought what effect it has on crime.

Most research into minimum wage and crime rates focuses on the areas that are most easily measured, income and unemployment. Minimum wage is known to directly impact both of these labor market factors, and in turn these two factors are known to impact crime rates. It is important to understand how these two factors impact crime rates to understand how minimum wage impacts crime rates.

Obama's Council of Economic Advisors released a report in April of 2016 that said increasing the federal minimum wage to $12 an hour would result in a 3 to 5 percent reduction in criminal activity ("Economic Perspectives on Incarceration and the Criminal Justice System," 2016). These findings are in line with a number of economic studies on the matter, and based on one study in particular. It was found that between 1980 and 1994, criminal activity experienced an increase partly because of decreasing wages among unskilled labor (Gould et al., 2002). This study showed that the measurable wage decline led to a dramatic increase in both property crime and violent crime. The study did show that unemployment during this period also had an effect, but the effect was much smaller than that of wages. This study can be considered an extension of previous research that sought to explain the link between labor market conditions and crime rates. Freeman (1982) finds an almost inconclusive relationship between unemployment and crime rates. The study shows that there is a relationship, but has trouble quantifying that relationship. Freeman finds that crime rates have a stronger association to the wages of unskilled workers. Increasing the wages of unskilled workers leads to a noticeable decrease in crime rates. Grogger (1997) notes that one reason blacks are more likely to commit crimes than whites in the United States is because they typically earn less than whites. This study suggests that wages can be used to reduce the economic disadvantages of blacks and thus reduce the disparity in the crime rates of blacks and whites in the United States. Studies like these that indicate wage has a strong effect on crime rates are why policy makers tout using the minimum wage as a tool for crime reduction.

It is important to remember that minimum wage does not just impact the wages of unskilled labor. Minimum wage also impacts employment levels. Because of this other impact,

there are researchers who examine the specific impact that raising the minimum wage has on employment levels. The goal of these studies is to isolate the role that the minimum wage plays in the unskilled labor supply and demand model. One study finds that increasing the minimum wage does not have a noticeable impact on the available employment for unskilled labor (Cengiz et al., 2019). This study examines Washington state because of its long record of state level minimum wage increases. It is noted that the available employment opportunities were not unduly affected by these repeated increases in the minimum wage throughout the years. Godøy and Reich (2019) examine lower wage areas across the entire United States to determine what impact increasing the effective minimum wage has on employment. They note that there is no noticeable decrease in employment opportunities for unskilled labor, even in states with lower wages in general such as Alabama and Mississippi. The research does indicate that poverty levels decrease noticeably as the effective minimum wage increases. Because the minimum wage does not appear to decrease employment in a noticeable fashion, the wage effect is likely stronger than the unemployment effect.

Studies that find the unemployment effect is either negligible or outweighed by the wage effect entirely are countered by other research showing that crime rates increase when minimum wage increases. Braun (2019) examines the minimum wage in the context of the crime minimizing wage floor and welfare maximizing wage floor. The current federal minimum wage is actually below the welfare maximizing wage floor, but near the crime minimizing wage floor. The study notes that raising the minimum wage will increase societal welfare and crime rates will increase simultaneously. There is an argument presented for raising the minimum wage at the federal level. The argument is not that crime rates will decrease, because they appear to

increase. This is not the only research to find crime rates increasing when minimum wage is increased. Fone et al. (2019) also find that increasing the minimum wage has the potential to increase crime. The study notes that a modest increase in the federal minimum wage would have little impact on crime rates in the United States. A more dramatic increase, such as that proposed by the Obama administration, would result in a significant jump in property crime rates. These findings indicate the federal minimum wage is very likely near the crime reducing level.

Minimum wage does not directly impact crime. Rather it impacts labor market conditions which in turn impact crime. This is part of the reason that there is not definitive consensus about how crime rates respond to changes in the minimum wage. That is not to say there is no consensus at all with regards to minimum wage and crime. The minimum wage demonstrates it has a noticeably stronger effect on property crime rates than it does on violent crime rates (Gould et al., 2002). This finding is the same for researchers who obtained different results regarding the unemployment effect and wage effect. Fone et al. (2019) note that violent crime rates are not as responsive to the minimum wage as property crime rates. Economic factors are more likely to influence whether a person commits a property crime than whether they commit a violent crime. This is because violent crimes are less likely to result in economic gain for a person than property crimes.

My research contributes to the topic of how the minimum wage impacts crime by examining how the minimum wage directly impacts violent crime rates, property crime rates and their respective categories. This study will focus on youths aged 16 to 24 in order to better isolate the true impact of the minimum wage. This group is more likely to experience the minimum

wage because they have not had the chance to develop skills and tenure that would allow them to demand higher wages. I use data that represents a cross section of states across the years 2000 through 2016. Rather than using the minimum wage itself in my analysis, I classify states based on those that set their minimum wage above the federal minimum wage and those that simply use the federal minimum wage. Based on this classification, I aim to determine what effect there is on crime from a state setting their minimum wage above the federal minimum wage. I will apply my model to all of the other categories of crime for the sake of comparison.

Chapter 3: Data and Methodology

In order to fully understand the theory behind how minimum wage impacts crime rates, it is necessary to understand the role that minimum wage plays in labor market conditions. Specifically, minimum wage affects the unskilled labor supply and demand model by acting as a price floor for unskilled labor. Firms cannot legally pay less than minimum wage and individuals are guaranteed to be paid at least minimum wage. The two effects that minimum wage is known to have on crime rates derives from this action on the unskilled labor supply and demand curves.

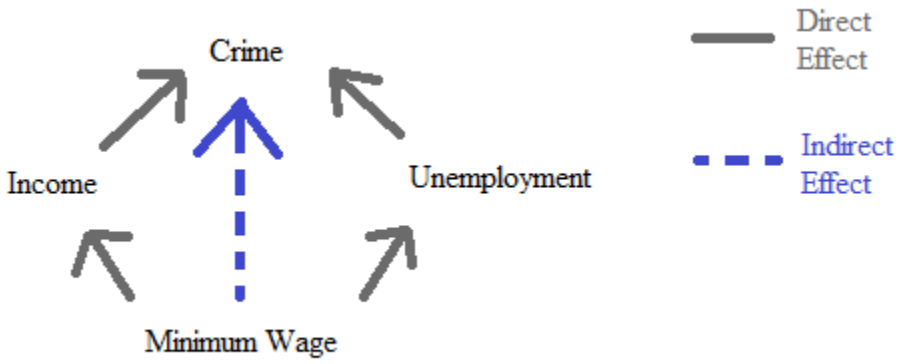
One of the effects is aptly named the wage effect. This effect is caused by the minimum wage's action on the unskilled labor supply curve. As the price paid for unskilled labor increases, more people will seek entry into the legitimate labor market. Additionally, people participating in the legitimate labor market will earn more for their hours worked. This effect is known to have a negative relationship with crime rates. As people earn higher wages, they have less need or want to engage in criminal activity.

The other effect of minimum wage acts in opposition to the wage effect and is known to have a positive relationship with crime rates. This effect is known as the unemployment effect. As minimum wage is increased, the price paid for unskilled labor by firms increases. This increase causes firms to demand less unskilled labor resulting in the hiring of fewer workers or reductions in worker hours. This results in people having a greater need or want to engage in criminal activity because of the reduction in income.

The full theory shows the two effects that minimum wage is known to have on the labor market. It is through these two effects on the labor market that minimum wage impacts crime rates. Figure 3.1 below shows the relationships of the full theory in a flow chart.

Figure 3.1

Flow Chart Demonstrating the Economic Theory



Understanding the role of the two effects at play is the key to building the full structural model showing how minimum wage affects crime rates. The relationship between minimum wage and crime rates means that the full structural model requires three equations. Because there are three equations in the full structural model, there are at least three endogenous variables. Income represents one endogenous variable and is the dependent variable in the first equation. This equation accounts for the wage effect. Unemployment is another endogenous variable and is the dependent variable in the second equation. This equation accounts for the unemployment effect. These two equations occur simultaneously. Crime is the third endogenous variable and the

dependent variable in the third equation. This third equation utilizes Income and Unemployment as explanatory variables.

Income = f (minimum wage, working hours, taxes, other socioeconomic variables)

Unemployment = f (minimum wage, overall economy, additional labor costs, other socioeconomic variables)

Crime = f (unemployment, income, crime control factors, other available opportunities, other socioeconomic variables)

Since unemployment and income are endogenous variables in the crime model, the equation cannot be directly estimated. Substituting the components of the income and unemployment equations directly into the crime equation results in the reduced form model, which is a function of purely exogenous factors. The reduced form model allows for testing the direct impact of minimum wage on crime.

Crime = f (minimum wage, other socioeconomic variables)

To construct an estimated regression model based on the reduced form equation, I use data representing a cross section of the 50 states over the course of the years 2000 through 2016. Rather than use the individual minimum wage rates for each state, I classify states based on whether they use the federal minimum wage or have set a higher minimum wage. This allows me to understand the impact of a state setting their minimum wage above the federal minimum wage. Minimum wage is not a factor for the entire population, nor is the entire population prone

to committing crimes. For this reason, I focus my examination on youths aged 16 to 24 since this group is more likely to be subject to the minimum wage and more likely to commit crimes. My crime data comes from the FBI Uniform Crime Report arrest data, which tracks 29 individual categories and three indices. The crime data is expressed as a rate of number of arrests per year per 100,000 population. Rather than examine all three indices and every category of crime the FBI tracks, I focus on property crime and violent crime. I provide in-depth analysis of my estimated results for the two indices and see if their respective categories have similar estimation results using this model. The categories of property crime are burglary, larceny-theft, motor vehicle theft and arson. The categories of violent crime are murder and non-negligent manslaughter, rape, robbery and aggravated assault. The results of my estimated regression for the total crime index and other categories tracked by the FBI are provided in the appendix for the sake of comparison.

By splitting the states into two groups based on whether they use the federal minimum wage or have set a higher minimum wage, it is possible to run a comparison of means test on the different types of crimes. It is necessary to note that this test only accounts for the difference in the minimum wage between the two groups of states and not any other factors which would also impact crime rates.

The comparison of means test based on whether a state uses the federal minimum wage or has set a higher minimum wage provides mixed results. Table 3.1 on page 28 shows the results of this test being applied to property crime and its categories and Table 3.2 on page 29 shows the results of this test being applied to violent crime and its categories. The results for

overall property crime in Table 3.1 show that states who use the federal minimum wage experience a mean of 183.00 arrests per year per 100,000 population while states who have set a higher minimum wage experience a mean of 177.20, but the p-value of 0.2339 suggests that this finding is not significant at even the 0.15 level. This suggests that states who use the federal minimum wage experience similar levels of property crime as states who have set a higher minimum wage. The results for overall violent crime in Table 3.2 show that states who use the federal minimum wage experience a mean of 43.74 arrests per year per 100,000 population while states who have set a higher minimum wage experience a mean of 50.37, and the p-value of 0.0002 suggests this finding is significant at the 0.01 level. In Table 3.1 the results of the test for youth larceny-theft show states who use the federal minimum wage experience a mean of 139.00 arrests per year per 100,000 population while states who have set a higher minimum wage experience a mean of 131.50, and the p-value of 0.0485 suggests this finding is significant above the 0.05 level. Which group of states experiences higher crime rates depends on what category of crime is being discussed. The two groups experience similar rates of property crime and burglary. States who use the federal minimum wage experience higher rates of larceny-theft and murder and non-negligent manslaughter. States who have set their minimum wage above the federal minimum wage experience higher rates of motor vehicle theft, arson, violent crime, rape, robbery and aggravated assault.

Table 3.1

Comparison of Means Based on State Minimum Wage for Youth Property Crimes

	Property Crime Index	N	t Stat	P Value
State Uses Federal Minimum Wage	183.00	552	1.19	0.2339
State Minimum Wage Set Above Federal Minimum Wage	177.20	298		
	Burglary	N	t Stat	P Value
State Uses Federal Minimum Wage	29.81	552	-0.20	0.8434
State Minimum Wage Set Above Federal Minimum Wage	30.03	298		
	Larceny-Theft	N	t Stat	P Value
State Uses Federal Minimum Wage	139.00	552	1.98	0.0485
State Minimum Wage Set Above Federal Minimum Wage	131.50	298		
	Motor Vehicle Theft	N	t Stat	P Value
State Uses Federal Minimum Wage	11.04	552	-2.04	0.0422
State Minimum Wage Set Above Federal Minimum Wage	12.35	298		
	Arson	N	t Stat	P Value
State Uses Federal Minimum Wage	1.14	552	-1.70	0.0889
State Minimum Wage Set Above Federal Minimum Wage	1.24	298		

Note. Figures represent youth arrest rate per 100,000 population.

Table 3.2

Comparison of Means Based on State Minimum Wage for Youth Violent Crimes

	Violent Crime Index	N	t Stat	P Value
State Uses Federal Minimum Wage	43.74	552	-3.74	0.0002
State Minimum Wage Set Above Federal Minimum Wage	50.37	298		
	Murder and Non-Negligent Manslaughter	N	t Stat	P Value
State Uses Federal Minimum Wage	1.42	552	4.87	<0.0001
State Minimum Wage Set Above Federal Minimum Wage	1.14	298		
	Rape	N	t Stat	P Value
State Uses Federal Minimum Wage	2.19	552	-3.94	<0.0001
State Minimum Wage Set Above Federal Minimum Wage	2.50	298		
	Robbery	N	t Stat	P Value
State Uses Federal Minimum Wage	11.55	552	-4.06	<0.0001
State Minimum Wage Set Above Federal Minimum Wage	13.93	298		
	Aggravated Assault	N	t Stat	P Value
State Uses Federal Minimum Wage	28.56	552	-3.13	0.0018
State Minimum Wage Set Above Federal Minimum Wage	32.48	298		

Note. Figures represent youth arrest rate per 100,000 population.

While this classification of states based on their minimum wage is key for this research, the comparison of means test does not provide a complete picture of crime rates in the United States. There are many different factors known to influence crime. Demographics are an important determinant of crime, particularly because it is known that males commit crimes at much higher rates than females. Crime control measures influence crime rates because policy

makers implement them for this express purpose. Education is known to influence crime in multiple ways. It serves as a substitute activity to crime and improves a person's position in the labor market. Economic factors are also important determinants of crime rates and one way that policy makers influence economic factors is through social welfare policy. In some instances, social welfare policy is implemented to change the very definition of what constitutes a crime.

The estimated regression model used in this study is based on the reduced form theoretical model, which measures the direct impact of the minimum wage on crime. I use the youth property crime index, youth violent crime index and the respective categories that make up these two indices as the dependent variables for this estimated regression. Table 3.3 on page 31 provides the descriptive statistics for the youth property crime index, youth violent crime index and the respective categories that make up these two indices. As the data set is a panel data set, I use panel estimation with fixed effects across the states, represented by α_i, to estimate the regression. The form of this estimated regression is this.

$$\text{Crime}_{it} = \alpha + \beta_1 \text{ State Minimum Wage}_{it} + \beta_2 \text{ Police Expenditure}_{it} + \beta_3 \text{ SNAP Recipients}_{it} + \beta_4 \text{College Attainment}_{it} + \beta_5 \log(\text{Beer Tax}_{it}) + \beta_6 \text{ Population Percent Male}_{it} + \beta_7 \text{Medicaid Expansion}_{it} + \beta_8 \text{ Marijuana Decriminalization}_{it} + \alpha_i + \varepsilon_{it}$$

Table 3.3

Descriptive Statistics for Types of Youth Crime

Variable	Description	N	Mean	Standard Deviation	Minimum	Maximum
Violent Crime	Index of Violent Offenses	850	46.06	24.81	6.06	140.24
Murder and Non-Negligent Manslaughter	Violent Offense	850	1.32	0.80	0.00	5.68
Rape	Violent Offense	850	2.30	1.09	0.00	10.54
Robbery	Violent Offense	850	12.39	8.05	0.08	44.65
Aggravated Assault	Violent Offense	850	29.93	17.51	3.67	104.65
Property Crime	Index of Property Offenses	850	180.96	66.23	31.59	370.01
Burglary	Property Offense	850	29.88	15.50	2.71	99.96
Larceny-Theft	Property Offense	850	136.38	51.33	19.49	297.51
Motor Vehicle Theft	Property Offense	850	11.50	8.79	1.07	47.43
Arson	Property Offense	850	1.18	0.81	0.09	8.82

Note. Figures represent youth arrest rate per 100,000 population.

Table 3.4 on page 33 lists all of the explanatory variables with their descriptions and hypothesized signs. The primary explanatory variable of interest in this model is State Minimum Wage. This variable represents whether a state uses the federal minimum wage or as set a higher minimum wage in a particular year. State Minimum Wage serves the purpose of measuring the direct impact of a state choosing to set their minimum wage above the federal minimum wage. The frequency statistics for State Minimum Wage are shown in Table 3.5 on page 33 along with the frequency statistics for Medicaid Expansion and Marijuana Decriminalization. Medicaid Expansion represents whether a state has expanded Medicaid in any manner in a given year and Marijuana Decriminalization represents whether a state has chosen to decriminalize marijuana possession in a given year. These two variables constitute social welfare policy controls and are expected to have negative signs for this reason. Table 3.6 on page 34 provides the descriptive

statistics of the other explanatory variables. Beer Tax, the dollar per gallon excise tax on beer in a state for a given year, is another social welfare policy variable and expected to have a negative sign for this reason. In the regression, the log of Beer Tax is used. SNAP Recipients, the number of SNAP recipients per 1,000 population in a given year, is a social welfare control as well as a proxy for poverty which is an important economic factor. Its sign is expected to be positive because it is a proxy for poverty. Population Percent Male, the proportion of a state's population that is male in a given year, is an important demographic control. Males commit crimes at a higher rate than females so its sign is expected to be positive. College Attainment, the proportion of the population over age 25 with a bachelor degree or higher in a given year, controls for education as well as being a demographic control. Its sign is expected to be negative because education improves a person's position in the labor market. Police Expenditures, the total per capita expenditure on police in a state in real 2017 dollars for a given year, controls for direct crime control measures. Its sign is uncertain since police expenditures can lead to reduced crime, but police expenditures might also respond to higher crime.

Table 3.4

Explanatory Variable Descriptions and Hypothesized Sign

Variable	Description	Hypothesized Sign
State Minimum Wage$_{it}$	Dummy Variable = 1 if state set minimum wage above federal minimum wage in year t	+/-
Police Expenditure$_{it}$	Per Capita Police Expenditures in 2017 dollars, state i in year t	+/-
SNAP Recipients$_{it}$	SNAP Benefits Recipients per 1,000 population, state i in year t	+
College Attainment$_{it}$	Percent of population aged 25 and over with at least a bachelor degree, state i in year t	-
Beer Tax$_{it}$	Beer Excise Tax in dollars per gallon, state i in year t	-
Population Percent Male$_{it}$	Percent of the total population that is male, state i in year t	+
Medicaid Expansion$_{it}$	Dummy Variable = 1 if state expanded Medicaid in any fashion in year t	-
Marijuana Decriminalization$_{it}$	Dummy Variable = 1 if state decriminalized Marijuana in year t	-

Table 3.5

Frequency Statistics of Classification Explanatory Variables

Variable	N	Value of 1	Value of 0	Percent=1
State Minimum Wage$_{it}$	850	298	552	35.06
Medicaid Expansion$_{it}$	850	108	742	12.71
Marijuana Decriminaliztion$_{it}$	850	242	608	28.47

Table 3.6

Descriptive Statistics of Non-Classification Explanatory Variables

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Police Expenditure$_{it}$	850	48.30	26.70	5.00	183.00
SNAP Recipients$_{it}$	850	107.23	44.69	28.91	225.78
College Attainment$_{it}$	850	27.45	5.00	15.10	42.70
Beer Tax$_{it}$	850	0.29	0.26	0.02	1.29
Population Percent Male$_{it}$	850	49.33	0.76	48.03	52.37

By applying this regression model to overall youth property crime and youth violent crime, I hope to determine whether the wage effect or unemployment effect is stronger for states who set their minimum wage above the federal minimum wage. I then investigate the types of property crime and violent crime to see if the estimated effects on overall crime rates are due to certain types of property and violent crime and not others. One expectation of the estimation is that minimum wage will be a more important factor for property crime than it is for violent crime.

Chapter 4: Results

The estimated regression results of the panel regression model with fixed effects across states for the youth property crime index are provided in Table 4.1 on page 36, with Table 4.2 on page 40 providing the estimated results of the model for the individual categories of youth property crime. The estimation results of the youth violent crime index are provided in Table 4.3 on page 43 and Table 4.4 on page 46 provides the estimated results of the model for the individual categories of youth violent crime.

The estimated model in Table 4.1 has the Youth Property Crime Index as the dependent variable. State Minimum Wage controls for youth wage in the model. The additional seven explanatory variables act as controls for factors that are important when discussing crime. Beer Tax, Medicaid Expansion and Marijuana Decriminalization represent social welfare policies known to impact criminal activity. It is important to note that the log of Beer Tax is used for the sake of interpretation. SNAP Recipients also represents a social welfare policy, but additionally acts as a proxy for poverty. Police Expenditures represents a crime control measure. College Attainment and Population Percent Male measure key demographic factors. This model explains about 69 percent of the total variation in the Youth Property Crime Index. The F-statistic for this estimated regression is 12.34 indicating the model is overall statistically significant at the 0.01 level. The F-statistic for fixed effects is 30.37 which means I reject the null hypothesis that fixed effects are jointly equal to zero at the 0.01 level. The F-statistic for jointly testing whether the estimated coefficients are equal to zero after controlling for fixed effects is 16.43 so I reject the null hypothesis that they are equal to zero at the 0.01 level.

Table 4.1

Fixed Effects Regression Results for Overall Youth Property Crime

Constant	-2547.620*** (537.100)
State Minimum Wage	-11.605** (4.621)
Medicaid Expansion	-19.863*** (5.606)
Marijuana Decriminalization	-10.619 (8.235)
Police Expenditure	-0.380** (0.170)
SNAP Recipients	0.238*** (0.053)
College Attainment	-7.370*** (1.079)
Beer Tax	-21.698** (8.893)
Population Percent Male	56.146*** (10.753)
R-squared	0.689
N	850
States	50
Years	17
F (Overall)	12.34***
F (Fixed Effects)	30.37***
F (βs)	16.43***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

This study attempts to test alternative hypotheses with regard to the effect of states setting a minimum wage above the federal minimum wage. If the estimated effect is positive, it

indicates that the unemployment effect is stronger. This effect occurs due to wage loss from diminished labor demand by firms. If the estimated effect is negative, it indicates that the wage effect is stronger. The variable that measures this effect is State Minimum Wage which classifies states by whether they use the federal minimum wage or have set a higher minimum wage. This effect occurs due to wage growth from the rising wage floor in the labor supply and demand model. The estimated coefficient on State Minimum Wage is -11.605, and is significantly different than zero at the 0.05 level. The effect of a state setting their minimum wage above the federal minimum wage is an 11.605 decrease in youth property crime incidences per year per 100,000 population, controlling for other factors. That equates to about six percent fewer incidences than the mean incidence of youth property crime for the period and states represented in this study. The negative sign on the estimated coefficient implies there is a negative relationship between youth property crime and the minimum wage rate, which indicates that the wage effect is stronger than the unemployment effect.

All of the estimated coefficients on the other explanatory variables are significantly different than zero at the 0.01 or 0.05 level except for Marijuana Decriminalization. The estimated coefficient on Medicaid Expansion is -19.863, and is significantly different than zero at the 0.01 level. This means that states who have expanded Medicaid in some fashion experience 19.863 less youth property crime incidences per year per 100,000 population than states who have not expanded Medicaid in some fashion, controlling for other factors. The direction of this effect is expected because expanding Medicaid improves the population's economic standing. The estimated coefficient on Police Expenditure is -0.380, and is significantly different than zero at the 0.05 level. This signifies that one more dollar per capita

spending on police reduces the incidence of youth property crimes per year per 100,000 population by 0.380. Since police act to directly mitigate crime, the direction of this estimate suggests this variable captures the effect of police on crime more than the effect of crime on police expenditures. The estimated coefficient on College Attainment is -7.370, and is significant at the 0.01 level. This means that one more percent of the over 25 population having attained at least a bachelor's degree reduces youth property crime by 7.370 incidences per year per 100,000 population, controlling for other factors. Education is known to mitigate crime rates, so the direction of this effect is as expected. The estimated coefficient on Beer Tax is -21.698, and is significantly different than zero at the 0.05 level. This means that a one percent increase in the dollar per gallon beer excise tax reduces youth property crime by 21.698 incidences per year per 100,000 population, controlling for other factors. Alcohol is often a factor in crimes, so the direction of this effect is as expected. The estimated coefficient on SNAP Recipients is 0.238, and is significantly different than zero at the 0.01 level. This means that one more SNAP recipient per 1,000 population leads to 0.238 more youth property crimes per year per 100,000 population, controlling for other factors. The direction of this effect is expected because SNAP is a proxy for poverty which is known to have a positive relationship with crime rates. The estimated coefficient on Population Percent Male is 56.146, and is significantly different than zero at the 0.01 level. This means that a one percentage point increase of males in the total population will lead to a 56.146 increase in youth property crimes per year per 100,000 population, controlling for other factors. Males are known to commit crimes at a much higher rate than females, so the direction of this effect is as expected.

I estimate the effect of minimum wage for each type of property crime. In Table 4.2 the estimated regression results for each of the four categories of property crime are shown. This model explains 78 percent of the total variation in Youth Burglary, 70 percent of the total variation in Youth Larceny-Theft, 71 percent of the total variation in Youth Motor Vehicle Theft, and 42 percent of the total variation in Youth Arson. The overall F-statistic for Youth Burglary is 24.18, for Youth Larceny-Theft it is 14.01, for Youth Motor Vehicle Theft it is 28.18 and for Youth Arson it is 12.66 indicating all four models are overall significant at the 0.01 level. The respective F-statistics for fixed effects are 43.52, 31.65, 28.11 and 8.86 meaning I reject the null that fixed effects are jointly equal to zero at the 0.01 level for all four models. The F-statistics for jointly testing whether the estimated coefficients are equal to zero after controlling for fixed effects for the four models respectively are 33.09, 17.26, 71.49 and 10.75 meaning I reject the null hypothesis that the estimated coefficients are jointly equal to zero for all four models at the 0.01 level.

Table 4.2

Fixed Effects Regression Results for the Types of Youth Property Crime

	Youth Burglary	Youth Larceny-Theft	Youth Motor Vehicle Theft	Youth Arson
Constant	-470.867*** (105.800)	-1707.920*** (407.700)	-338.766*** (68.605)	-19.327** (8.976)
State Minimum Wage	-2.188** (0.910)	-7.600** (3.508)	-2.139*** (0.590)	0.136* (0.077)
Medicaid Expansion	-6.181*** (1.104)	-16.819*** (4.256)	-0.918 (0.716)	-0.203** (0.094)
Marijuana Decriminalization	-0.469 (1.622)	-9.082 (6.252)	0.775 (1.052)	-0.183 (0.138)
Police Expenditure	-0.131*** (0.034)	-0.199 (0.129)	-0.071*** (0.022)	-0.001 (0.003)
SNAP Recipients	-0.002 (0.011)	0.334*** (0.041)	-0.107*** (0.007)	-0.003*** (0.001)
College Attainment	-1.467*** (0.212)	-5.712*** (0.819)	-0.227* (0.136)	-0.053*** (0.018)
Beer Tax	-6.327*** (1.751)	-15.827** (6.751)	-1.866 (1.136)	0.121 (0.149)
Population Percent Male	10.154*** (2.118)	38.178*** (7.600)	7.031*** (1.374)	0.456** (0.180)
R-squared	0.780	0.702	0.712	0.424
N	850	850	850	850
States	50	50	50	50
Years	17	17	17	17
F (Overall)	24.18***	14.01***	28.18***	12.66***
F (Fixed Effects)	43.52***	31.65***	28.11***	8.86***
F (βs)	33.09***	17.26***	71.49***	10.75***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

The estimated effect of State Minimum Wage is significant at the 0.10 level or better for all four types of property crime, but the direction of its effect depends on the type of crime. The

estimated coefficient on State Minimum Wage is -2.188 when modeling Youth Burglary, and the estimate is significantly different than zero at the 0.05 level. The estimated coefficient on State Minimum Wage is -7.600 when modeling Youth Larceny-Theft, and is significantly different than zero at the 0.05 level. The estimated coefficient on State Minimum Wage is -2.139 when modeling Youth Motor Vehicle Theft, and is statistically different than zero at the 0.01 level. The estimated coefficient for State Minimum Wage is 0.136 when modeling Youth Arson, and is significantly different than zero at the 0.10 level. As with the overall Youth Property Crime Index, the wage effect is stronger than the unemployment effect for Youth Burglary, Youth Larceny-Theft and Youth Motor Vehicle Theft. The positive relationship between State Minimum Wage and Youth Arson suggests that the unemployment effect is stronger than the wage effect for this category of crime.

The estimated effects of the other explanatory variables vary some from the regression model being applied to overall youth property crime. Several estimated coefficients that were significantly different from zero when modeling overall youth property crime are not significantly different from zero when modeling individual property crime categories. In the estimated model for Youth Burglary, the estimated coefficient of SNAP Recipients is not significantly different than zero. In the estimated model for Youth Larceny-Theft, the estimated coefficient of Police Expenditures is not significantly different than zero. In the estimated model for Youth Motor Vehicle Theft, the estimated coefficients of Medicaid Expansion and Beer Tax were not significantly different than zero. In the estimated model for Youth Arson, the estimated coefficients of Police Expenditure and Beer Tax were not significantly different than zero. Most relationships were the same for estimated coefficients that were significantly different than zero,

but not all relationships held. The estimated coefficient for SNAP Recipients is negative in the Youth Motor Vehicle Theft model and in the Youth Arson model when it was positive when modeling overall youth property crime. This difference in relationship is not expected.

Table 4.3 is the estimated results of the model applied to the Youth Violent Crime Index. This model explains over 79 percent of the total variance in the Youth Violent Crime Index. The F-statistic for this estimated regression is 14.78 indicating the model is overall statistically significant at the 0.01 level. The F-statistic for fixed effects is 52.91 meaning I reject the null hypothesis that fixed effects are jointly equal to zero at the 0.01 level. The F-statistic for jointly testing whether the estimated coefficients are equal to zero after controlling for fixed effects is 16.43 so I reject the null hypothesis that the estimated coefficients are jointly equal to zero at the 0.01 level.

Table 4.3

Fixed Effects Regression Results for Youth Violent Crime

Constant	-418.144** (163.400)
State Minimum Wage	1.559 (1.406)
Medicaid Expansion	-3.917** (1.706)
Marijuana Decriminalization	-2.824 (2.506)
Police Expenditure	-0.010 (0.052)
SNAP Recipients	-0.014 (0.016)
College Attainment	-1.196*** (0.328)
Beer Tax	7.177*** (2.706)
Population Percent Male	10.153*** (3.272)
R-squared	0.795
N	850
States	50
Years	17
F (Overall)	14.78***
F (Fixed Effects)	52.91***
F (βs)	6.80***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

If there is an effect on youth crime from states choosing to set their minimum wage above the federal minimum wage, then it is anticipated the effect will be greater for youth property

crime than it is for youth violent crime. Economic factors are expected to have less influence on violent crime rates. To determine which type of crime is more affected by minimum wage I compare the estimated coefficient results of State Minimum Wage in Table 4.1 to the results in Table 4.3. In Table 4.3 the estimated coefficient on State Minimum Wage is 1.559 when modeling youth violent crime, but this estimated coefficient is not significantly different than zero. This finding indicates that minimum wage has no effect on the Youth Violent Crime Index. The estimated coefficient on State Minimum Wage when modeling youth property crime in Table 4.1 is -11.605 and significantly different than zero at the 0.05 level. These results show that minimum wage has a greater effect on youth property crime than it does on youth violent crime.

Only four of the other explanatory variables have estimated coefficients that show to be significantly different than zero at the 0.10 level or better when modeling the Youth Violent Crime Index. The estimated coefficient on Medicaid Expansion is -3.917, and is significantly different than zero at the 0.05 level. The estimated coefficient on College Attainment is -1.196, and is significantly different than zero at the 0.01 level. Both of these variables display a negative relationship to youth violent crime as expected. The estimated coefficient on Population Percent Male is 10.153, and is significantly different than zero at the 0.01 level. This positive relationship to youth violent crime is expected. The estimated coefficient on Beer Tax is 7.177, and is significantly different than zero at the 0.01 level. Although this result suggests that a one percentage point increase in the beer excise tax leads to 7.177 more incidences per year per 100,000 population of violent crime, the direction of this effect is unexpected. As seen in Table 4.4, this effect appears to only hold for Youth Aggravated Assault.

Table 4.4 shows the estimated results of this model for each of the four categories of violent crime. This model explains about 76 percent of the total variation in Youth Murder and Non-Negligent Manslaughter, 67 percent of the total variation in Youth Rape, 82 percent of the variation in Youth Robbery, and 83 percent of the variation in Youth Aggravated Assault. The overall F-statistic for Youth Murder and Non-Negligent Manslaughter is 20.08, for Youth Rape it is 30.22, for Youth Robbery it is 15.01 and for Youth Aggravated Assault it is 17.70 indicating all four models are overall significant at the 0.01 level. The respective F-statistics for fixed effects are 41.38, 21.97, 63.51 and 65.76 meaning I reject the null that fixed effects are equal to zero at the 0.01 level for all four models. The F-statistics for jointly testing whether the estimated coefficients are equal to zero after controlling for fixed effects for the four models respectively are 15.24, 31.79, 5.86 and 16.88 meaning I reject the null hypothesis that the estimated coefficients are jointly equal to zero for all four models at the 0.01 level.

Table 4.4

Fixed Effects Regression Results for Types of Youth Violent Crime

	Youth Murder and Non-Negligent Manslaughter	Youth Rape	Youth Robbery	Youth Aggravated Assault
Constant	-22.884*** (5.670)	-17.029* (9.093)	-110.155** (49.318)	-277.663*** (104.600)
State Minimum Wage	-0.002 (0.049)	0.093 (0.078)	0.770* (0.424)	0.723 (0.900)
Medicaid Expansion	-0.001 (0.059)	0.171* (0.095)	-1.751*** (0.515)	-2.318** (1.092)
Marijuana Decriminalization	0.105 (0.087)	-0.379*** (0.139)	-0.144 (0.756)	-1.812 (1.604)
Police Expenditure	-0.004** (0.002)	-0.008*** (0.003)	0.025 (0.016)	-0.021 (0.033)
SNAP Recipients	-0.005*** (0.001)	-0.009*** (0.001)	0.009* (0.005)	-0.042*** (0.010)
College Attainment	-0.011 (0.011)	-0.033* (0.018)	-0.421*** (0.099)	-0.984*** (0.210)
Beer Tax	-0.008 (0.094)	-0.086 (0.151)	-0.528 (0.817)	6.067*** (1.732)
Population Percent Male	0.485*** (0.114)	0.413** (0.182)	2.330** (0.988)	7.008*** (2.095)
R-squared	0.764	0.671	0.823	0.831
N	850	850	850	850
States	50	50	50	50
Years	17	17	17	17
F (Overall)	20.08***	30.22***	15.01***	17.70***
F (Fixed Effects)	41.38***	21.97***	63.51***	65.76***
F (βs)	15.24***	31.79***	5.86***	16.88***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Looking at the estimated coefficient results for State Minimum Wage in Table 4.4, I see that three of the individual categories of youth violent crime display similar results to overall youth violent crime. The estimated coefficient on State Minimum Wage for Youth Murder and Non-Negligent Manslaughter is -0.002, and it is not significantly different than zero. The estimated coefficient on State Minimum Wage for Youth Rape is 0.093, but it is not significantly different than zero. The estimated coefficient on State Minimum Wage for Youth Aggravated Assault is 0.723, but it is not significantly different than zero. For these three categories the findings indicate that minimum wage has no effect, which is the same as I found with the Youth Violent Crime Index. Economic factors are expected to influence robbery, as this crime does have an economic component. The estimated coefficient on State Minimum Wage for Youth Robbery is 0.770, and is significantly different than zero at the 0.10 level. So unlike with overall youth violent crime, minimum wage does show to have an effect on youth robbery. This positive relationship between State Minimum Wage and Youth Robbery shows that the unemployment effect is stronger than the wage effect for this category of crime.

The estimated effects of the other explanatory variables vary for the four categories of violent crime from the estimated results of overall violent crime. The estimated coefficient on Medicaid Expansion when modeling Youth Murder and Non-Negligent Manslaughter does not show to be significantly different than zero. This is different than what was found with overall youth violent crime. The estimated coefficient on Medicaid Expansion for Youth Rape is 0.171, and is significantly different than zero at the 0.10 level. This is an unexpected result. The estimated coefficient on Marijuana Decriminalization for Youth Rape is -0.379, and is significantly different than zero at the 0.01 level. This relationship is the expected result. The

estimated coefficient for Police Expenditure is significantly different than zero at the 0.05 level for Youth Murder and Non-Negligent Manslaughter and Youth Rape. This varies from the overall youth violent crime. The estimated coefficient on SNAP Recipients did not show to be significantly different than zero at the 0.10 level or higher for overall youth violent crime, but does for the four categories. SNAP Recipients displays a negative relationship with Youth Murder and Non-Negligent Manslaughter, Youth Rape and Youth Aggravated Assault. This negative relationship is not expected. The estimated effect is positive for Youth Robbery and the opposing effects in these models lead to the effect on overall violent crime being insignificant in Table 4.3. The estimated coefficient on College Attainment for Youth Murder and Non-Negligent Manslaughter does not show to be significantly different than zero, which varies from what was found with overall youth violent crime. The estimated coefficient on Beer Tax was not significantly different than zero for Youth Murder and Non-Negligent Manslaughter, Youth Rape and Youth Robbery. These display results that differ from overall youth violent crime. The estimated coefficient on Beer Tax for Youth Aggravated Assault is 6.067, and is significant at the 0.01 level. This result is similar to what is seen in the overall youth violent crime model, but the positive relationship displayed is not expected.

For crimes with economic components, minimum wage has some effect. States who set their minimum wage above the federal minimum wage see some change in the rate of these crimes. The wage effect is stronger than the unemployment effect for the Youth Property Crime Index, Youth Burglary, Youth Larceny-Theft and Youth Motor Vehicle Theft. States who set their minimum wage above the federal minimum wage show decreases in these categories of crime. The unemployment effect is stronger than the wage effect for Youth Arson and Youth

Robbery. States who set their minimum wage above the federal minimum wage show increases in these categories of crime.

Chapter 5: Conclusion

There is extensive discussion regarding the minimum wage rate in the United States, with many states and cities passing increases that phase in over the course of several years. The goal of these increases is to improve the situation for young and unskilled workers in the labor force. These increases will have an impact on crime rates. This study examines what impact minimum wage has on crime by estimating youth crime rates using panel estimation with fixed effects across the 50 states over a 17-year period.

Overall property crime and three of its categories display a negative relationship with minimum wage. States that choose to set their minimum wage above the federal minimum wage experience decreases in incidences of burglary, larceny-theft, motor vehicle theft and overall property crime. For these categories of crime, the wage effect is stronger than the unemployment effect. One category of property crime and one category of violent crime show a positive relationship with minimum wage. When states choose to set their minimum wage above the federal minimum wage, they experience an increase in incidences of arson and robbery. For these categories of crime, the unemployment effect is stronger than the wage effect. Minimum wage did not show any impact on overall violent crime, murder and non-negligent manslaughter, rape and aggravated assault.

In terms of future research, it might be prudent to use county level data rather than state level. Crime is a more localized phenomenon and crime rates vary greatly based on the region being discussed. By using counties, it should be possible to better account for the effect of regionality. It will be necessary to adapt the model in such an analysis to account for the fact

that many cities and counties have chosen to set their minimum wages above the states minimum wage.

The goal of this paper is to directly measure the effect that minimum wage has on crime rates. Since the federal government has chosen to not raise the minimum wage in a number of years, many states are choosing to raise their minimum wages on their own. This phenomenon has implications for crime rates and it is important that states understand what happens when they set their minimum wages above the federal minimum wage. Property crime will decrease, but this is not a complete picture. There are specific categories of crime that will increase when states set their minimum wage above the federal minimum wage. Policy makers should take note of this study and understand that crime rates might respond to changes in the minimum wage.

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Appendix

Table 1

Descriptive Statistics for the Other Types of Crime

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Total Crime	850	1335.68	529.40	162.15	6699.72
Other Assaults	850	112.71	4.93	18.76	306.33
Forgery and Counterfeiting	850	7.55	4.93	0.07	33.40
Fraud	850	17.98	20.34	0.34	210.48
Embezzlement	850	2.40	2.63	0.00	16.33
Buying, Receiving and Possessing Stolen Property	850	11.43	8.31	0.00	47.83
Vandalism	850	32.01	17.18	4.87	98.99
Carrying or Possessing a Weapon	850	16.39	8.83	0.63	54.06
Prostitution and Criminalized Vice	850	4.00	6.12	0.00	57.07
Other Sex Offenses	850	5.07	3.32	0.14	20.66
Drug Abuse Violations	850	166.67	71.49	19.40	438.35
Gambling	850	0.82	1.62	0.00	16.26
Offenses Against Family and Children	833	7.12	6.37	0.10	42.43
DUI	833	105.23	52.72	5.82	367.88
Liquor Law Violations	850	147.13	139.95	0.81	967.77
Drunkenness	833	28.15	40.01	0.00	196.40
Disorderly Conduct	833	67.64	54.49	3.04	523.90
Vagrancy	833	2.07	4.42	0.00	38.50
All Other Offenses	850	358.51	255.41	16.96	5240.11
Suspicion	833	0.42	1.54	0.00	26.35
Curfew Violations	833	12.58	17.70	0.00	117.04
Runaways	490	15.90	20.32	0.00	139.38

Note. Figures represent youth arrest rate per 100,000 population.

Table 2

Fixed Effects Regression Results for Total Crime

Constant	-1594.400 (4501.800)
State Minimum Wage	-44.043 (38.734)
Medicaid Expansion	-145.326*** (46.990)
Marijuana Decriminalization	-45.875 (69.029)
Police Expenditure	-2.907** (1.426)
SNAP Recipients	-1.998*** (0.447)
College Attainment	-44.565*** (9.040)
Beer Tax	-41.256 (74.544)
Population Percent Male	102.065 (90.135)
R-squared	0.658
N	850
States	50
Years	17
F (Overall)	41.15***
F (Fixed Effects)	17.81***
F (βs)	28.23***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 3

Fixed Effects Regression Results for Other Assaults

Constant	-1386.520*** (326.500)
State Minimum Wage	-1.489 (2.809)
Medicaid Expansion	-10.175*** (3.408)
Marijuana Decriminalization	-8.276* (5.007)
Police Expenditure	-0.112 (0.103)
SNAP Recipients	-0.081** (0.032)
College Attainment	-3.707*** (0.656)
Beer Tax	-11.962** (5.407)
Population Percent Male	31.449*** (2.809)
R-squared	0.757
N	850
States	50
Years	17
F (Overall)	24.75***
F (Fixed Effects)	37.71***
F (βs)	21.56***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 4

Fixed Effects Regression Results for Forgery and Counterfeiting

Constant	-43.811 (40.214)
State Minimum Wage	0.261 (0.346)
Medicaid Expansion	-0.200 (0.420)
Marijuana Decriminalization	0.977 (0.617)
Police Expenditure	-0.020 (0.013)
SNAP Recipients	-0.053*** (0.004)
College Attainment	-0.514*** (0.081)
Beer Tax	-0.967 (0.666)
Population Percent Male	0.261 (0.346)
R-squared	0.685
N	850
States	50
Years	17
F (Overall)	32.71***
F (Fixed Effects)	23.00***
F (βs)	73.72***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 5

Fixed Effects Regression Results for Fraud

Constant	256.205 (180.500)
State Minimum Wage	1.303 (1.553)
Medicaid Expansion	1.117 (1.884)
Marijuana Decriminalization	5.466** (2.768)
Police Expenditure	0.046 (0.057)
SNAP Recipients	-0.130*** (0.018)
College Attainment	-1.417*** (0.363)
Beer Tax	-2.933 (2.989)
Population Percent Male	1.303 (1.553)
R-squared	0.628
N	850
States	50
Years	17
F (Overall)	36.14***
F (Fixed Effects)	16.13***
F (βs)	23.47***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 6

Fixed Effects Regression Results for Embezzlement

Constant	-144.263*** (15.159)
State Minimum Wage	0.258** (0.130)
Medicaid Expansion	0.039 (0.158)
Marijuana Decriminalization	-0.182 (0.232)
Police Expenditure	-0.002 (0.005)
SNAP Recipients	-0.011*** (0.002)
College Attainment	-0.075** (0.030)
Beer Tax	0.234 (0.304)
Population Percent Male	0.258** (0.130)
R-squared	0.843
N	850
States	50
Years	17
F (Overall)	19.37***
F (Fixed Effects)	70.91***
F (βs)	21.40***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 7

Fixed Effects Regression Results for Buying, Receiving or Possessing Stolen Property

Constant	-183.695*** (58.977)
State Minimum Wage	-1.294** (0.507)
Medicaid Expansion	-0.456 (0.616)
Marijuana Decriminalization	-0.146 (0.904)
Police Expenditure	0.032* (0.019)
SNAP Recipients	-0.034*** (0.006)
College Attainment	-0.634*** (0.118)
Beer Tax	-1.280 (0.977)
Population Percent Male	3.910** (0.507)
R-squared	0.762
N	850
States	50
Years	17
F (Overall)	21.89***
F (Fixed Effects)	39.95***
F (βs)	26.00***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 8

Fixed Effects Regression Results for Vandalism

Constant	250.000** (107.000)
State Minimum Wage	0.884 (0.921)
Medicaid Expansion	-5.359*** (1.117)
Marijuana Decriminalization	-1.715 (1.641)
Police Expenditure	-0.013 (0.034)
SNAP Recipients	-0.039*** (0.011)
College Attainment	-1.383*** (0.215)
Beer Tax	-0.158 (1.772)
Population Percent Male	0.884 (0.921)
R-squared	0.817
N	850
States	50
Years	17
F (Overall)	41.23***
F (Fixed Effects)	47.11***
F (βs)	39.60***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 9

Fixed Effects Regression Results for Carrying or Possessing a Weapon

Constant	-422.690*** (57.420)
State Minimum Wage	0.092 (0.494)
Medicaid Expansion	-1.561*** (0.599)
Marijuana Decriminalization	0.130 (0.880)
Police Expenditure	-0.081*** (0.018)
SNAP Recipients	-0.057*** (0.006)
College Attainment	-0.323*** (0.115)
Beer Tax	-2.645*** (0.951)
Population Percent Male	0.092 (0.494)
R-squared	0.800
N	850
States	50
Years	17
F (Overall)	13.12***
F (Fixed Effects)	55.66***
F (βs)	40.47***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 10

Fixed Effects Regression Results for Prostitution and Criminalized Vice

Constant	-145.193*** (33.602)
State Minimum Wage	-0.289 (0.289)
Medicaid Expansion	-1.278*** (0.351)
Marijuana Decriminalization	0.016 (0.515)
Police Expenditure	0.000 (0.011)
SNAP Recipients	-0.015*** (0.003)
College Attainment	-0.007 (0.066)
Beer Tax	-0.143 (0.556)
Population Percent Male	2.884*** (0.673)
R-squared	0.858
N	850
States	50
Years	17
F (Overall)	13.43***
F (Fixed Effects)	84.56***
F (βs)	9.32***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 11

Fixed Effects Regression Results for Other Sex Offenses

Constant	-56.104** (21.787)
State Minimum Wage	-0.585*** (0.188)
Medicaid Expansion	-0.655*** (0.227)
Marijuana Decriminalization	-0.163 (0.334)
Police Expenditure	0.009 (0.007)
SNAP Recipients	-0.012*** (0.002)
College Attainment	-0.269*** (0.044)
Beer Tax	-0.490 (0.361)
Population Percent Male	1.330*** (0.436)
R-squared	0.797
N	850
States	50
Years	17
F (Overall)	35.02***
F (Fixed Effects)	43.41***
F (βs)	36.44***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 12

Fixed Effects Regression Results for Drug Abuse Violations

Constant	-3423.990*** (537.500)
State Minimum Wage	0.672 (4.624)
Medicaid Expansion	-17.497*** (5.610)
Marijuana Decriminalization	-46.008*** (8.241)
Police Expenditure	-0.412** (0.170)
SNAP Recipients	-0.093* (0.053)
College Attainment	-1.999* (1.079)
Beer Tax	-3.570 (8.900)
Population Percent Male	0.672 (4.624)
R-squared	0.733
N	850
States	50
Years	17
F (Overall)	9.38***
F (Fixed Effects)	39.37***
F (βs)	17.23***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 13

Fixed Effects Regression Results for Gambling

Constant	-23.769** (12.093)
State Minimum Wage	0.295*** (0.104)
Medicaid Expansion	-0.200 (0.126)
Marijuana Decriminalization	0.034 (0.185)
Police Expenditure	-0.003 (0.004)
SNAP Recipients	-0.004*** (0.001)
College Attainment	-0.096*** (0.024)
Beer Tax	-0.251 (0.200)
Population Percent Male	0.295*** (0.104)
R-squared	0.735
N	850
States	50
Years	17
F (Overall)	11.14***
F (Fixed Effects)	39.07***
F (βs)	11.30***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 14

Fixed Effects Regression Results for Offenses Against Family and Children

Constant	-0.322 (45.958)
State Minimum Wage	-0.956** (0.406)
Medicaid Expansion	-0.238 (0.481)
Marijuana Decriminalization	-0.238 (0.704)
Police Expenditure	-0.059*** (0.015)
SNAP Recipients	-0.014*** (0.005)
College Attainment	-0.353*** (0.093)
Beer Tax	1.668** (0.761)
Population Percent Male	-0.956** (0.920)
R-squared	0.755
N	850
States	49
Years	17
F (Overall)	10.57***
F (Fixed Effects)	43.55***
F (βs)	16.43***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 15

Fixed Effects Regression Results for DUI

Constant	-716.276* (407.100)
State Minimum Wage	-3.652 (3.558)
Medicaid Expansion	-16.007*** (4.312)
Marijuana Decriminalization	7.843 (6.340)
Police Expenditure	-0.446*** (0.129)
SNAP Recipients	-0.186*** (0.041)
College Attainment	-3.142*** (0.822)
Beer Tax	-5.163 (6.751)
Population Percent Male	-3.652 (3.558)
R-squared	0.719
N	850
States	49
Years	17
F (Overall)	74.47***
F (Fixed Effects)	17.20***
F (βs)	22.18***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 16

Fixed Effects Regression Results for Liquor Law Violations

Constant	5860.400*** (844.500)
State Minimum Wage	-3.478 (7.267)
Medicaid Expansion	-33.404*** (8.815)
Marijuana Decriminalization	33.299** (12.950)
Police Expenditure	-0.051 (0.268)
SNAP Recipients	-0.183** (0.084)
College Attainment	-10.819*** (1.696)
Beer Tax	1.332 (13.984)
Population Percent Male	-3.478 (7.267)
R-squared	0.828
N	850
States	50
Years	17
F (Overall)	72.13***
F (Fixed Effects)	39.52***
F (βs)	38.92***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 17

Fixed Effects Regression Results for Drunkenness

Constant	-379.495* (204.300)
State Minimum Wage	3.520* (1.803)
Medicaid Expansion	-5.922*** (2.137)
Marijuana Decriminalization	6.237** (3.130)
Police Expenditure	-0.150** (0.065)
SNAP Recipients	-0.042** (0.021)
College Attainment	-0.919** (0.413)
Beer Tax	-5.691* (3.381)
Population Percent Male	9.652** (4.090)
R-squared	0.877
N	850
States	49
Years	17
F (Overall)	21.83***
F (Fixed Effects)	92.32***
F (βs)	6.39***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 18

Fixed Effects Regression Results for Disorderly Conduct

Constant	-213.511 (322.600)
State Minimum Wage	4.101 (2.847)
Medicaid Expansion	-13.292*** (3.375)
Marijuana Decriminalization	-2.363 (4.944)
Police Expenditure	-0.093 (0.102)
SNAP Recipients	-0.101*** (0.033)
College Attainment	-3.973*** (0.652)
Beer Tax	-7.802 (5.340)
Population Percent Male	4.101 (2.847)
R-squared	0.835
N	850
States	49
Years	17
F (Overall)	17.11***
F (Fixed Effects)	67.69***
F (βs)	26.99***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 19

Fixed Effects Regression Results for Vagrancy

Constant	-159.799***
	(35.230)
State Minimum Wage	-0.340
	(0.312)
Medicaid Expansion	-1.186***
	(0.369)
Marijuana Decriminalization	-0.621
	(0.540)
Police Expenditure	0.017
	(0.011)
SNAP Recipients	0.005
	(0.004)
College Attainment	-0.223***
	(0.071)
Beer Tax	-0.635
	(0.583)
Population Percent Male	3.194***
	(0.705)
R-squared	0.701
N	850
States	49
Years	17
F (Overall)	8.18***
F (Fixed Effects)	33.90***
F (βs)	6.78***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 20

Fixed Effects Regression Results for All Other Offenses

Constant	2163.896 (2612.100)
State Minimum Wage	-37.652* (22.475)
Medicaid Expansion	-4.339 (27.265)
Marijuana Decriminalization	-43.228 (40.053)
Police Expenditure	-1.027 (0.827)
SNAP Recipients	-0.902*** (0.259)
College Attainment	-3.859 (5.245)
Beer Tax	15.406 (43.253)
Population Percent Male	-24.131 (52.300)
R-squared	0.506
N	850
States	50
Years	17
F (Overall)	11.48***
F (Fixed Effects)	13.30***
F (βs)	6.75***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 21

Fixed Effects Regression Results for Suspicion

Constant	40.095**
	(18.665)
State Minimum Wage	-0.055
	(0.165)
Medicaid Expansion	0.184
	(0.195)
Marijuana Decriminalization	-0.561*
	(0.286)
Police Expenditure	-0.005
	(0.006)
SNAP Recipients	-0.003
	(0.002)
College Attainment	-0.063*
	(0.038)
Beer Tax	-0.064
	(0.309)
Population Percent Male	-0.671*
	(0.374)
R-squared	0.312
N	850
States	49
Years	17
F (Overall)	8.28***
F (Fixed Effects)	5.57***
F (βs)	5.20***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 22

Fixed Effects Regression Results for Curfew Violations

Constant	-178.316 (118.600)
State Minimum Wage	-0.475 (1.047)
Medicaid Expansion	-5.261*** (1.241)
Marijuana Decriminalization	7.249*** (1.817)
Police Expenditure	-0.010 (0.038)
SNAP Recipients	-0.077*** (0.012)
College Attainment	-1.058*** (0.240)
Beer Tax	-0.752 (1.963)
Population Percent Male	4.736** (2.374)
R-squared	0.788
N	850
States	49
Years	17
F (Overall)	43.16***
F (Fixed Effects)	37.62***
F (βs)	27.16***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01

Table 23

Fixed Effects Regression Results for Runaways

Constant	-489.188*** (171.100)
State Minimum Wage	0.999 (1.192)
Medicaid Expansion	-1.157 (4.048)
Marijuana Decriminalization	-3.478 (4.131)
Police Expenditure	0.012 (0.040)
SNAP Recipients	-0.068*** (0.020)
College Attainment	0.166 (0.235)
Beer Tax	12.288*** (3.314)
Population Percent Male	0.999 (1.192)
R-squared	0.913
N	850
States	49
Years	10
F (Overall)	39.30***
F (Fixed Effects)	53.65***
F (βs)	3.86***

Note. Estimated state fixed effects are not included in table.

Standard errors are in parentheses.

* p < .10, ** p < .05, *** p < .01